Highlights
Vol. 1 No.13
Dec. 15, 1958

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Washington SCIENCE TRENDS

RESEARCH AND DEVELOPMENT Division now being established by the Small Business Administration could have important advantages for firms interested in participating in Government R&D programs or sharing in the knowledge gained from such programs. Under the plan, the Government will also aid in the formation of R&D "pools" in which companies can join in a common effort.

The new Government office will: (1) Assist small businesses in obtaining Government contracts for research and development; (2) assist them in obtaining the benefits of research and development performed under Government contracts or at Government expense; and (3) provide technical assistance to small firms in accomplishing research and development work.

Joint Research and Development programs were authorized by Congress in its last session. Small Business Administration is now empowered to help from R&D Pools to:

* Construct, acquire or establish laboratories and other facilities for the conduct of research.

* Undertake and utilize applied research.

* Collect research information related to a particular industry and disseminate it to participating members.

* Conduct applied research on a protected, propietary and contractual basis with member or non-member firms, Government agencies and others.

* Prosecute Applications for patents and render patent services for participating members.

* Negotiate and grant licenses under patents held under a joint program, and to establish corporations designed to exploit particular patents obtained by it.

New R&D division will be organized by E. Burke Wilford, Philadelphia aeronautical engineer. Qualified R&D specialists are being assigned to aid businessmen in field offices at Boston, Philadelphia, Richmond, Chicago, Dallas and Los Angeles. SCIENCE TRENDS will provide complete coverage of the future activities of the new R&D operation.

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SCIENCE INFORMATION SERVICE is now being expanded by the National Science Foundation, Washington 25, D.C. and will perform "extensive studies" of science publication programs, translation services and related fields.

SILICON CARBIDE: Air Research and Development Command will sponsor a "by invitation only" conference on the new high-temperature semiconductor, silicon carbide at Boston, Mass. April 2 and 3, 1959. The Command says that silicon carbide transistors could theoretically operate at temperatures up to 700° Centigrade. The conference will cover the growing of silicon carbide single crystals; silicon carbide as a solid and as a semiconductor and silicon carbide devices. (Details from Information Services, Air Research and Development Command, Andrews Air Force Base, Washington 25, D.C.)

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TECHNICAL MANPOWER: The U.S. Civil Service Commission will be aided in the competition for technical manpower by a new law which permits payment of travel costs to first post of duty for new employees. Positions to be covered include operations research; medical officer; all professional engineers; architecture; physical science administration; physics; electronic research, development and test; and geophysical exploration, survey and investigation. Also, chemistry; metallurgy; astronomy; meteorology; oceanography; mathematics; and mathematical statistics. (Details from Civil Service Commission, Room 305, Washington 25, D.C.)

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NUCLEAR ENERGY PROSPECTS: This view on the future of nuclear energy comes from W. Kenneth Davis, former director of reactor development for the U.S. Atomic Energy Commission, and now Vice President of the Bechtel Corp., San Francisco:

> "At most we can anticipate only about 25 percent of our total energy requirements coming from nuclear power even after it is fully developed and economically competitive. This is quite a substantial contribution, being about equal to all energy consumption in the U.S. today, since consumption is expected to just about quadruple by 2,000 A.D.
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> "However, the really significant point is that nuclear energy by itself cannot satisfy the ever-increasing demands for energy and is not the answer that will be so badly needed by a country and a world running out of fuel resources in another 50 to 75 years."

His proposals: greater conservation of conventional fuels, new methods of storing thermal or electrical energy, new methods of energy utilization which permit greater use of electrical power or heat from large central units.

RADIOACTIVE WASTE: A Congressional Subcommittee under Rep. Chet Holifield, (D) Calif., will begin hearings Jan. 28 on the growing problems of radioactive waste disposal. Holifield says he hopes to find out "the scope of the problem and the possible solutions (and) whether the proposed scale of research and development is adequate to meet the needs of the coming era."

(Tentative outline of the hearings is available upon request to Joint Committee on Atomic Energy, The Capitol, Washington 25, D.C.)

FUEL CYCLE DEVELOPMENT: AEC has received 107 proposals from 38 firms to provide services and facilities and to perform research and development in its new Fuel Cycle Development Program. The Commission hopes that "substantial" reductions in cost can be achieved by new methods for the fabrication and use of fuel elements, removal and reenrichment of these elements, and their reuse.

CONTRAIL FORECASTING: Air Force and Navy are sponsoring studies of contrails, the vapor trails left by jets flying at high altitudes. The services hope to make jet detection more difficult for enemy observers by avoiding or eliminating the contrails wherever possible. Research at Cornell Aeronautical Laboratories, Buffalo, N.Y. indicates that contrails with a small amount of water can be seen in bright sunlight with clear skies whereas, under cloudy conditions, only contrails of much greater water content can be detected. Research indicates that a pilot may take advantage of the camouflage aspects of a high-overcast sky.

An instrument to measure water droplet size was developed in connection with the contrail investigations, and will also be used in developing aircraft de-icing systems. The Laboratory produced photographs of water droplets still in liquid form at temperatures of 94° below freezing.

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AIRWAY RESEARCH AND DEVELOPMENT: The new Federal Aviation Agency has consolidated its R&D functions in a Bureau of Research and Development. Research activities formerly handled at the Civil Aeronautics Authority Technical Development Center, Indianapolis, Ind. will be transferred to the Bureau in Washington or to the National Aviation Facilities Experimental Center (NAFEC) at Atlantic City, New Jersey.

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MAP PAPERS: Research for the Army Engineers has demonstrated that synthetic fibers added to paper stock considerably enhance the strength characteristics of map paper. A National Bureau of Standards evaluation showed that of the different fibers investigated, polyesters give the best required dimensional stability. Paper containing polyamide fibers has excellent folding, tearing and bursting strength, but low dimensional stability. (Details from National Bureau of Standards, Office of Technical Information, Washington 25, D.C.)

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TANTALUM GRADIENT FURNACE: The National Bureau of Standards is using an unusual type of furnace which provides steady temperature conditions between selected temperature limits. The simple and compact device is made of three tantalum strips welded together. It was designed for use in preparing thin metal films of different average-crystallite size in connection with studies of electron scattering. However, the furnace is finding wide application in other investigations. It is being considered, with suitable adaptions, for measurements of the thermoconductivity of metals at very high temperatures. (Details from National Bureau of Standards, Office of Technical Information, Washington 25, D.C.

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AUTOMATED POST OFFICE: Post Office Department is considering a proposal from Intelex Systems, Inc., a subsidiary of International Telephone and Telegraph for an experimental mail processing plant and post office at Providence, R. I. The proposal envisages control of plant operations from a central point having a visual or electronic view of all activities; machine sorting of parcels and letter mail; synchronized conveyor movements and other automatic features. No cost estimates are yet available.

THE CHECKLIST

( ) Aircraft Structure, a French study, with an English summary, of research work on structures and temperatures at supersonic and hypersonic speed. 100 pages; Free. (Write Technical Information Division, NASA, 1520 H Street, N.W. For Publication No. CN-6588)

( ) Turbojet Fuels a study showing that low molecular weight hydrocarbons are "much superior" to current jet fuels in certain respects and are attractive from the standpoint of aircraft range, availability and cost. 44 pages; Free. (Write Technical Information Division, NASA, 1520 H Street, N.W. for Publication NASA RM E56121)

( ) Vacuum Tube and Semi-Conductor Devices, a translation of a 1957 Russian handbook. 222 pages; price upon application. (Write Photoduplication Service, Library of Congress, Washington 25, D.C. for JPRS 296)

( ) Radiobiology in USSR, a translation of articles in various Soviet periodicals. 28 pages; price upon application. (Write Photoduplication Service, Library of Congress, Washington 25, D.C. for JPRS 731)

( ) Applications of Isotopes, translated abstracts of three publications on the use of isotopes in Soviet industry. 63 pages; price upon application. (Write Photoduplication Service, Washington 25, D.C. for JPRS 734)

( ) Airplane Power Plants, a manual prepared by the Office of Chief of Naval Operations and primarily concerned with the design, operation and performance of reciprocating, or piston, type of engine. Jets and turbine engines are briefly discussed. 275 pages; $2.50. (Write Book Department, Washington Sceince Trends, 1120 National Press Bldg., Washington 4, D.C.)

( ) Weather, a manual of winds-aloft observations prepared by the U.S. Weather Bureau in cooperation with the Air Force and Navy. 45 cents. (Write Superintendent of Documents, Government Printing Office, Washington 25 D.C. for Publication No. C 30.59/44:26.42)

TECHNICAL REPORTS

(These catalogs of technical reports present brief listing of research studies available to industry. Single copies of the catalogs are free upon written application to OTS, U.S. Department of Commerce, Washington 25, D.C.)

( ) Titanium, Parts I and II, covers titanium metal and alloys for the period 1920 to 1958. No. 349 and 350.

( ) Titanium Barium Titanate, a special catalog covering the period 1946 to 1958. No. 351.

( ) Photography, a listing of reports in such fields as high-speed, infrared, underwater, color and night photography as well as papers, printers and recorders. No. 352.

( ) Cameras, covering the period 1921-1958 and including accessories such as projectors, shutters, filters and exposure meters.

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